

WHAT IS CLAIMED IS:

1. A method for forming fluid ejector devices, comprising:  
forming channels in at least one of a first wafer, a second wafer and zero, one or more intermediate layers;  
forming at least one cross trench on at least one of the first and second wafers and the zero, one or more intermediate layers, that interacts the formed channels to form orifices for the channels;  
combining the first and second wafers and the zero, one or more intermediate layers to form a wafer structure containing a plurality of fluid ejector devices;  
forming front faces for the fluid ejector devices by dicing at least into the cross trenches such that the orifices are offset from the front faces.
2. The method of claim 1, wherein the orifices are set back from the front faces formed by dicing.
3. The method of claim 1 wherein the orifices extend in front of the front faces formed by dicing.
4. The method of claim 1, wherein the cross trench is formed by reactive ion etching.
5. The method of claim 1, wherein the channels are flared near the orifice.
6. The method of claim 1, wherein the channels are tapered near the orifice.
7. The method of claim 1, wherein forming front faces for the fluid ejector device by dicing at least to a depth that does not extend to the orifices.
8. A method for forming a fluid ejector device, comprising:  
forming a heater wafer containing bubble-nucleating heaters and related electronics, a polymer layer, and a channel wafer;  
forming at least one cross-trench structure in at least one of the heater wafer, the polymer layer, and the channel wafer that intersects the channels formed in at least one of the channel wafer, the polymer layer, and the heater wafer to form orifices for the channels;  
bonding the channel wafer over the polymer layer, and the polymer layer over the heater wafer to form a bonded structure; and

forming a front face of the fluid ejector device by dicing at least into the at least one cross-trench of the bonded structure such that the orifices are offset from the front face.

9. The method of claim 8, wherein the at least one orifice is set back from the front face of the bonded structure formed by dicing.

10. The method of claim 8 wherein the orifices extend in front of the surfaces formed by dicing.

11. The method of claim 8, wherein the at least one cross-trench is formed by reactive ion etching.

12. The method of claim 8, wherein the channel is flared near the orifice.

13. The method of claim 8, wherein the channel is tapered near the orifice.

14. The method of claim 8, wherein forming front faces for the fluid ejector device by dicing at least to a depth that does not extend to the orifices.

15. A fluid ejector, comprising:  
 channels formed in at least one of a first wafer, a second wafer and zero, one or more intermediate layers;  
 at least one cross-trench formed in at least one of the first and second wafers at the zero, one or more intermediate layers that intersects the channels to form orifices for the channels, wherein the combination of the first and second wafers on the zero, one or more intermediate layers form a wafer structure containing a plurality of fluid ejector devices;

front faces formed for the fluid devices by at least dicing into the cross-trenches such that the orifices are offset from the front faces.

16. The fluid ejector of claim 15, wherein the orifices are set back from the front face formed by dicing.

17. The fluid ejector of claim 15, wherein the orifices extend in front of the surfaces formed by dicing.

18. The fluid ejector of claim 15, wherein the cross-trench is formed by reactive ion etching.

19. The fluid ejector of claim 15, wherein front faces are formed for the fluid devices by dicing at least to a depth that does not extend to the orifices.

20. A fluid ejector device, comprising:

a heater wafer containing bubble-nucleating heaters and related electronics;

a polymer layer;

a channel wafer;

at least one cross-trench formed in at least one of the heater wafer, the polymer layer, and the channel wafer that intersects the channels formed in at least one of the channel wafer, the polymer layer, and the heater wafer to form orifices for the channel, wherein the channel wafer is over the polymer layer, and the polymer layer is over the heater wafer to form a bonded structure; and

a front face formed by dicing at least into the at least one cross-trench of the bonded structure.

21. The fluid ejector device of claim 20, wherein the at least one orifice is set back from a front face of the bonded structure formed by dicing.

22. The fluid ejector device of claim 20, wherein the orifices extend in front of the front faces formed by dicing.

23. The fluid ejector device of claim 20, wherein the at least one cross-trench is formed by reactive ion etching.

24. The fluid ejector device of claim 20, wherein the channel is flared near the orifice.

25. The fluid ejector claim 20, wherein the channel is tapered near the orifice.

26. The fluid ejector of claim 20, wherein front faces are formed for the fluid devices by dicing at least to a depth that does not extend to the orifices.